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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,661	10/24/2003	Wiltold Paw	49022/59150 US	9926

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EDWARDS & ANGELL, LLP
P.O. BOX 55874
BOSTON, MA 02205

EXAMINER	
VINH, LAN	

ART UNIT	PAPER NUMBER
1765	

DATE MAILED: 12/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/692,661	PAW ET AL.	
	Examiner	Art Unit	
	Lan Vinh	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) *15 and 16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-9 and 11-14* is/are rejected.

7)☒ Claim(s) *4, 10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Newly submitted claims 15-16 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The original presented claims 1-10 are directed to a method for producing silicon wafer whereas newly added claims 15-16 are directed a solution/composition for use in etching silicon wafer

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 15-16 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 5, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Ilardi et al (US 5,466,389)

Ilardi discloses a method for cleaning microelectronic substrate. The method comprises the steps of:

supplying a substrate fabricated substantially of silicon (col 5, lines 48-50)

exposing the substrate to an alkaline cleaner solution (col 3, lines 56-60), which reads on exposing the substrate to an etching bath containing a caustic etching solution the cleaner solution contains additives such as chlorite salt, an iodate salt (col 4, lines 21-28)

Regarding claim 5, Ilardi discloses that the alkaline cleaner comprises 0.1-10 % of addictive (col 13, lines 10-13), which reads on wherein the additive has an additive concentration of at least about 0.01% by weight.

Regarding claim 12, Ilardi discloses that any suitable alkaline may be used in the cleaner composition (col 2, lines 65-66)

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2-3, 6-8, 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ilardi et al (US 5,466,389) in view of Maeno et al (US 5,714,407)

Ilardi method has been described above. Unlike the instant claimed inventions as per claims 2-3, Ilardi fails to disclose using additives such as potassium iodate or sodium iodate in the cleaner solution

Maeno discloses a method for manufacturing an electronic device using an etching agent comprises the step of using additives such as potassium iodate or sodium iodate in the etching solution (col 5, lines 2-7)

Since Ilardi discloses that the cleaner solution contains additive such as an iodate salt, one skilled in the art at the time the invention was made would have found it obvious to modify Ilardi's cleaner solution by adding additives such as potassium iodate or sodium iodate in view of Maeno because Maeno discloses potassium iodate is easiest to handle and thus preferable (col 5, lines 5-8)

Unlike the instant claimed inventions as per claims 6-8, Ilardi fails to disclose forming the additive by chemical reaction between iodic acid and hydroxide/I2 with chlorate in the etching bath

Maeno also discloses forming the additive by chemical reaction of the iodic acid in the etching solution (col 5, lines 9-12)

One skilled in the art at the time the invention was made would have found it obvious to modify Ilardi method by using iodic acid in the cleaner solution because Maeno discloses that the etching agent preferably contains iodine ions because the addition of iodine ions changes iodine generated by the etching into I_3- which dissolves the agent, thereby preventing the precipitation of halogen or the like, thus it is possible to prevent etching defects (col 5, lines 15-19)

Unlike the instant claimed inventions as per claims 13-14, Ilardi fails to disclose the step of replenishing the addictive by adding more iodate salt as the iodate salt is depleted

Maeno also discloses the step of adding more halooxoacid salt/iodate salt to the etching solution (col 6, lines 33-50)

Hence, one skilled in the art at the time the invention was made would have found it obvious to modify Ilardi cleaner solution by adding/replenish more iodate salt as the iodate salt/additive is depleted in view of Maeno teaching because Maeno discloses that it is preferable that the concentration of halooxoacid salt is at least 0.04 mol/l to produce uniform etching (col 6, lines 54-56)

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ilardi et al (US 5,466,389) in view of Morita et al (US 6,431,186)

Ilardi method has been described above. Unlike the instant claimed invention as per claim 9, Ilardi fails to disclose using additives such as sodium chlorite

Morita discloses a method for cleaning electronic component using a cleaning solution contains additive such as sodium chlorite (col 3, lines 15-17)

Since Ilardi cleaner solution is an alkaline solution, one skilled in the art at the time the invention was made would have found it obvious to modify Ilardi's cleaner solution by using additive such as sodium chlorite as per Morita because according to Morita, fluids contains oxidizing substance such as sodium chlorite supplemented with an alkaline solution can be used (col 3, lines 12-33)

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ilardi et al (US 5,466,389) in view of Lack et al (US 2001/0044264 A1)

Ilardi method has been described above. Unlike the instant claimed invention as per claim 11, Ilardi fails to disclose using lithium iodate as an addictive

Lack discloses a method for polish semiconductor substrate using a polishing composition/etching composition includes lithium iodate as an oxidizing agent/addictive (col 2, paragraph 0039)

Since Ilardi discloses that the cleaner solution contains additive such as an oxidizing agent, one skilled in the art at the time the invention was made would have found it obvious to modify Ilardi's cleaner solution by adding additives such as lithium iodate as per Lack because Lack discloses that an oxidizing agent that can be added to a polishing solution includes lithium iodate (col 2, paragraph 0039)

Allowable Subject Matter

8. Claims 4, 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments filed 9/19/2005 have been fully considered but they are not persuasive.

The applicants argue that the invention as claimed is directed to achieving desirable surface characteristics while etching wafers. Ilardi et al. do not disclose or suggest such a method because the teachings of Ilardi et al. are directed to merely a method for

cleaning wafers that minimizes the etching effects. This argument does not commensurate with the scope of claim 1 since claim 1 does not require/recite the language of " achieving desirable surface characteristics while etching wafers"

It is argued that Ilardi teaches away from the claimed composition in that their cleaning solution requires aqueous metal ion free bases, a nonionic surfactant and a component to control pH while claim 1 has no such requirements. This argument is unpersuasive because while it is true that claim 1 has no such requirement, it is also true that claim 1 language of "an etching bath containing" does not exclude the use of additional element in the etching bath/composition

In response to applicant's argument that there is no suggestion to combine the references of Maeno et al. with Ilardi et al because Maeno et al. is directed to etching nmorphous silicon while Ilardi et al. discloses a cleaning solution that tries to avoid undue etching effects. The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, since Ilardi suggests that the cleaner solution contains additive such as an iodate salt, one skilled in the art at the time the invention was made would have found it obvious to modify Ilardi's cleaner solution by adding additives such as potassium iodate or sodium iodate in Maeno method to produce the claimed invention

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LV
December 2, 2005